numerous small pigmented moles of medium dark color. Over the right posterior-superior spine of the ilium was an absolutely black mole, split pea in size, slightly elevated, with the margin circumscribed and apparently not invasive. The thoracic viscera were in normal position. The abdomen, now scaphoid, had flabby walls. The note all over the abdomen was tympanitic save in the upper right quadrant, where it was quite flat and did not shift with change of position or with respiration.

Here too a small, firm, indefinite mass was felt which was apparently attached to the parietal wall. Neither kidney was felt nor was the edge of the liver palpable. The following day the patient, relieved of his discomfort, insisted upon leaving the hospital.

CONCLUSIONS. The character of the two fluids obtained from the cases here described were so nearly identical in gross appearance, chemical reactions, and the microscopic appearance of the sediments that the unconfirmed diagnosis in the second case seems hardly open to doubt.

In the two cases here diagnosed the character of the effusion was the sole clue to the nature of the malady at the time it furnished evidence of the disease.

It is reasonable to suppose that visceral melanoma is not infrequently associated with effusion, and that a study of its character will be helpful in the diagnosis of other doubtful cases.

THE EFFECT OF CASTRATION UPON OSTEOMALACIA IN THE MALE.[1]

By CHARLES A. ELLIOTT, M.D.,

AND

WALTER H. NADLER, M.D.,

CHICAGO.

THE case presented is of interest because osteomalacia in males is a rare condition. It is of interest also, because, while the operation has long been suggested, there is no other report, as far as we know, of a male patient treated by castration. This patient has been under observation long enough to warrant some conclusions as to the probable effect of castration.

Dock found reported in this country, up to 1895, only 11 cases of osteomalacia, all in females. Hahn, in 1899, was able to collect from the literature 42 cases in males, but the diagnosis of some of these is in doubt. McCrudden, in 1910, stated that among 360 cases of osteomalacia reported by five writers, 39 were in men.

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[1] Presented to the Chicago Society of Internal Medicine, May 22, 1916.

Without making a special search he found reported in the last twenty-five years 10 cases in unmarried females and 9 cases in males. In 4 of the latter the diagnosis was confirmed by necropsy.

CASE HISTORY. The patient, aged thirty-four years, first came under observation in October, 1910. At that time he complained of pain in the hips, groin, and heels.

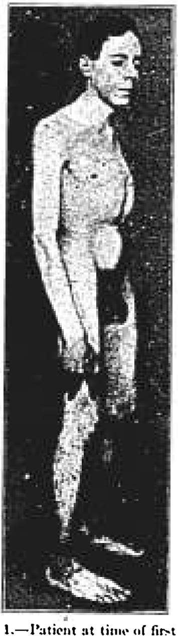

FIG. 1.—Patient at time of first examination, October, 1910.

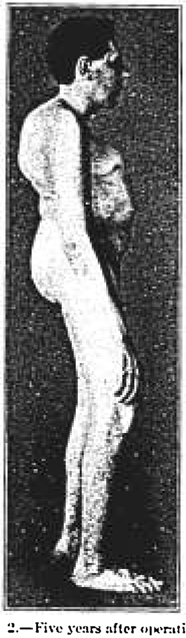

FIG. 2.—Five years after operation August, 1916.

In 1906 and 1907, while training for a wrestling match, he noticed a soreness across the chest and an unusual shortness of breath after running. He had previously been perfectly well. On March 17, 1907, he was thrown in a match by a scissors hold. The squeezing of his chest caused excruciating pain. In July, while working on a farm, it was remarked that the bib of his overalls seemed pushed forward. Later, he noticed stiffness and tender-

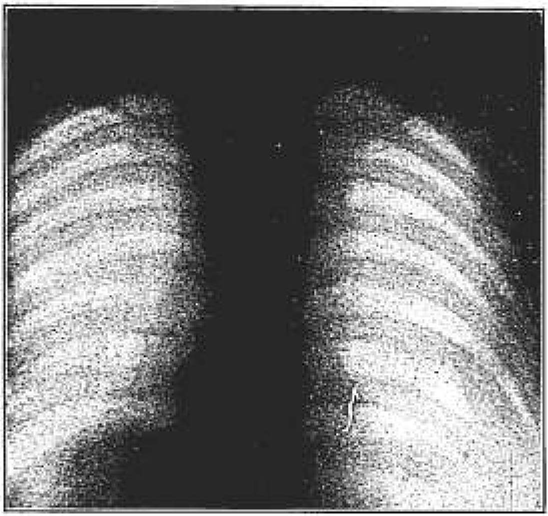

FIG. 3.—Chest radiogram, October, 1910. Note the apparently poor radiogram due to the loss of lime deposit.

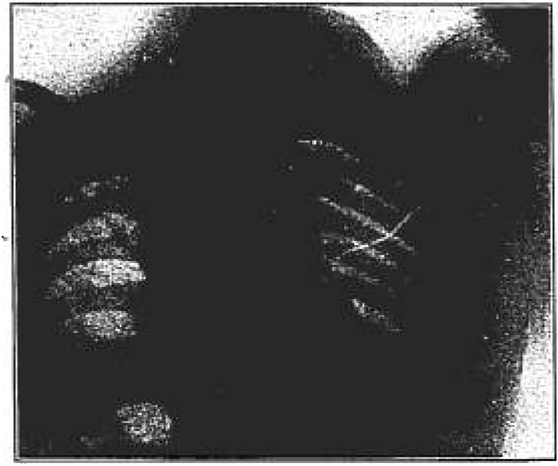

FIG. 4.—Chest radiogram, November, 1913

ness of both Achilles' tendons. In the summer of 1908 the heels felt bruised and sore. He was treated for flat-foot and rheumatism, without relief. At this time, although he seemed aware of a deformity, the chest was pronounced normal by several examiners. After seven months the knees became painful and two months later the hips were affected. There was pain in the upper thigh, especially upon rising from a sitting position. During this period the patient performed hard manual work, in the hope of regaining his health. After some months the chest became noticeably deformed. He was unable to stoop because of pain in the hips. He could not rise without the aid of his hands.

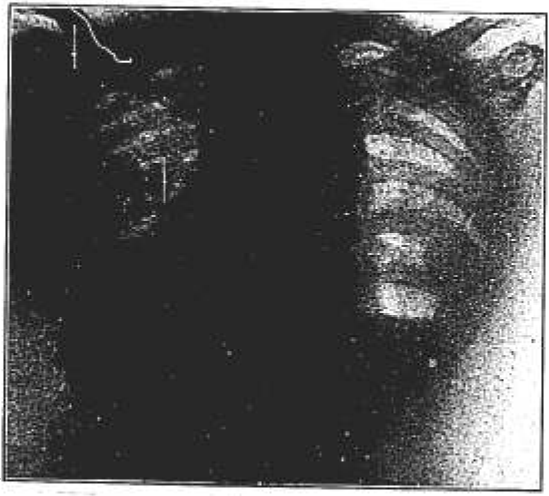

FIG. 5.—Chest radiogram, May, 1916.

There was no family history of deformity, goitre, tuberculosis, or malignancy. The patient had measles at four years, followed by whooping-cough. He had no fractured bones except a broken clavicle in infancy. He denied venereal infection. There had never been much hair upon his face or body; he needed to shave only once in two weeks.

The patient had been an athlete since the age of thirteen years. From 1904 to 1907 he was in the United States Army, chiefly as cook. He became a professional wrestler; he boxed and wrestled frequently. He could raise 500 pounds above his head. When nineteen years he stood 5 feet 11$\frac{3}{4}$ inches in his bare feet and weighed 160 pounds.

When first examined, in 1910, the patient was fairly well nourished and weighed 127 pounds. He had moderate general adenopathy. The chest showed great prominence anteriorly with lateral compression (pigeon breast). Marked angulation at the level of the sixth and seventh vertebræ. The ribs were very pliable and could be pressed back into the normal anteroposterior position. The iliac bones were very tender. Intense pain was produced by pushing together the iliac crests. Both heel bones were tender.

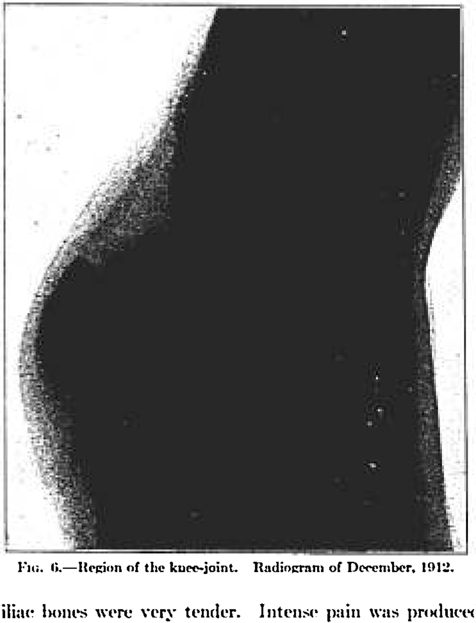

FIG. 6.—Region of the knee-joint. Radiogram of December, 1912.

No other abnormalities were found. Blood and urine were normal; the Wassermann test was negative. Radiograms showed a characteristic loss of bone markings and mineral deposit as well as chest deformity.

Treatment with phosphorus was begun and was followed for over three years. Thyroid extract, pituitrin, Fowler's solution, green vegetable diet, and adrenalin caused no improvement. On the contrary the bones remained soft and tender and the chest deformity increased. In June, 1911, both testes were removed by Dr. Allen B. Kanavel. They were reported normal grossly and histologically. Examination of the urine and feces showed, contrary to expectation, an increased elimination of CaO and P_2O_5 in the days following as compared with the days immediately preceding operation.

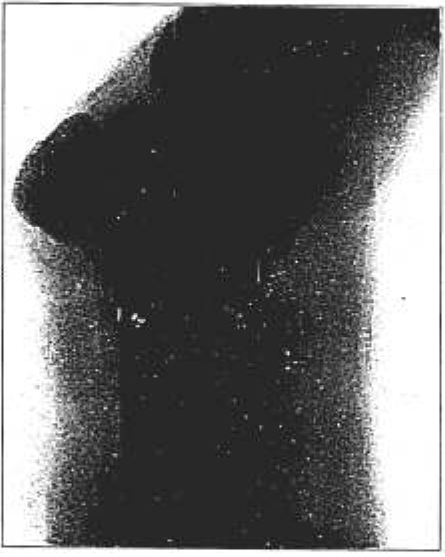

Fig. 7.—Region of the knee-joint, May, 1916.

Six months after operation the patient felt well, but the chest deformity had reached a high grade. After fourteen months, while on thyroid extract treatment, he became very nervous and developed a tremor which has persisted. There had been no tremor before this time. One year after operation the bones seemed harder. Sugar tolerance was increased, elimination following the feeding of 124 grams of glucose.

In 1913 there was less pain and the patient was able to walk five blocks without difficulty. His height was 5 feet 5 inches. He stood several inches taller in the morning than at night. Radiograms showed increased chest deformity and no improvement in bone structure. In 1914 nervousness and tremor increased. Since 1915, when medication was stopped, he has used a crutch and a cane for the relief of pain in walking.

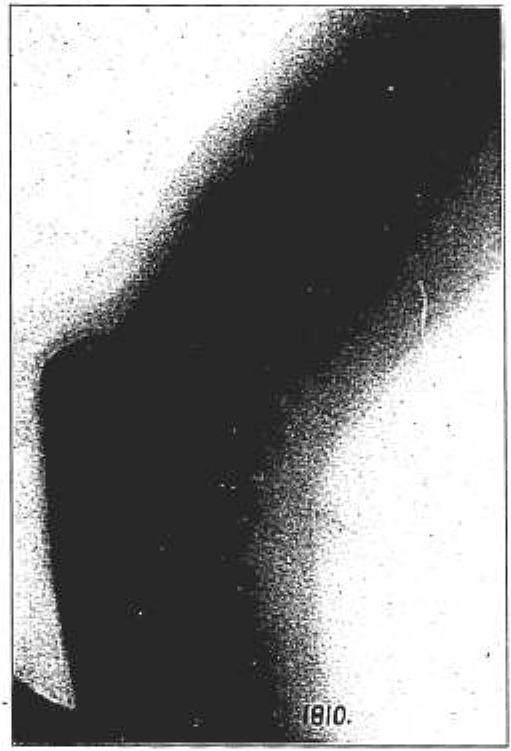

FIG. 8.—Region of the elbow-joint, October, 1910.

At the present time the patient states that he has recovered from his former "lost" feeling. He dates the improvement from six months after operation. The pain in the knees has persisted. There have been no signs or symptoms of stones in the urinary tract. The thyroid is small; the palpebral fissures seem wide; a fine tremor is present. There is a moderate secondary anemia. Temperature has been normal throughout the course. No foci of infection have been found. While the bones seem harder, radiograms show no improvement in the general structure but rather an increased porosity. The skull bones participate in the loss of mineral deposit; the sella turcica is small.

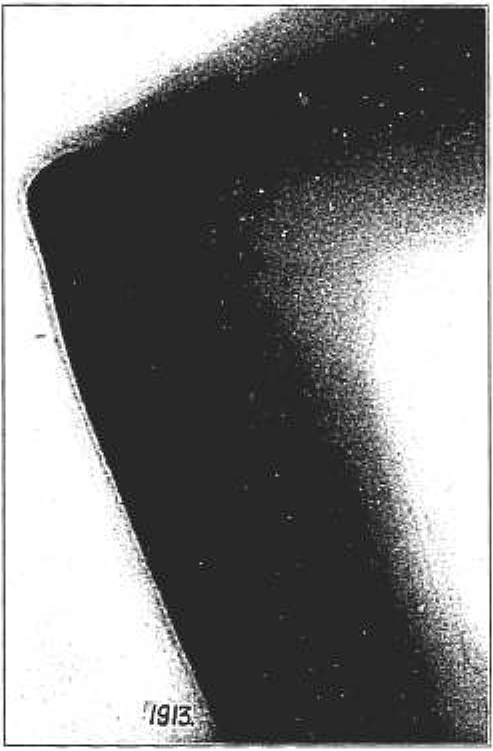

FIG. 9.—Region of the elbow-joint, November, 1913.

The case presented is one of osteomalacia of the type designated metaplastic malacia or fibrous osteitis by von Recklinghausen, who suggests an analogy to inflammatory fibrous tissue produced in chronic myocarditis and hepatitis.

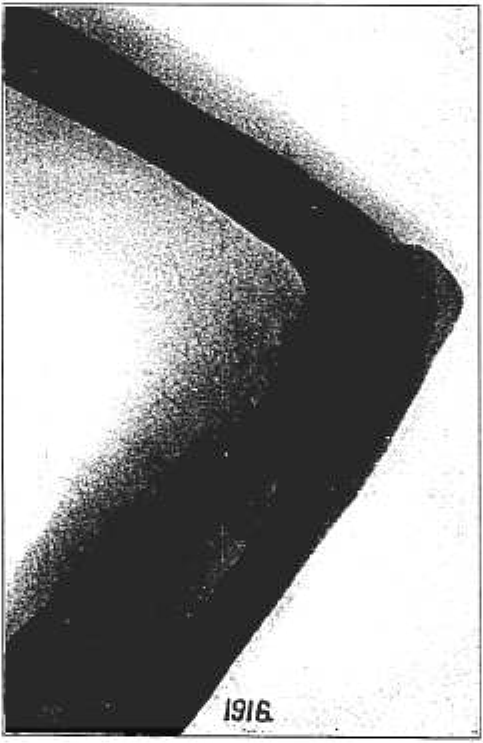

FIG. 10.—Region of the elbow-joint, May, 1916.

In this case the process seems to have begun nine to ten years ago in the vertebral column, although very early there were symptoms which led to the diagnosis of "rheumatism." The early involvement of all the bones is characteristic of male osteomalacia. As in the other cases reported there was no response to the usual methods of treatment.

A possible etiological factor in this case was the injury to bones incurred in boxing and wrestling. Such injuries, not severe enough to cause fractures, may, according to McCrudden, be sufficient to upset the balance of bone metabolism. There has been no evidence of disturbed internal secretion beyond increased sugar tolerance and rapid development of a persistent tremor after a short course of thyroid extract.

In spite of progressive chest deformity and unimproved bone structure, the possibility of a remission is suggested by the prolonged course, the confinement of deformity to the vertebral column, and the clinical improvement in the hardness of bone and in general well-being. According to Tinz, spontaneous cure or arrest of the process has not been noted in male cases. Berger describes an apparent remission in a case after extreme deformity of chest and extremities had developed. In the case presented castration may have helped to exert a favorable influence.

The cause of osteomalacia is not known. The disease has been attributed to infection, errors of nutrition, and perverted glandular function. Organisms have been isolated from the blood of patients and of animals suffering with a similar condition. Organisms isolated from the blood of white rats have reproduced malacia after injection into other rats. Feeding experiments have suggested the relation of errors of nutrition. The theory of perverted glandular function has been most supported, and much work has been done in the attempt to fix the responsibility of the various ductless glands. The ovaries, hypophysis, adrenals, thyroid, and parathyroids have been thought to play a role, singly or as a part of a polyglandular syndrome.

The loss of calcium and the softening of bone, together with a new production of bone poor in lime are characteristic. There is a tendency to lime deposit elsewhere, as in the kidneys and bladder. McCrudden believes that osteomalacia is an exaggeration of a normal function, that the balance of bone metabolism is disturbed by excessive demands for calcium, as in pregnancies, bone tumors, and fractures. When bone katabolism exceeds anabolism the result is osteomalacia.

Treatment is empirical. Phosphorus, adrenalin, pituitrin, thyroid extract, arsenic, chloral, and chloroform narcosis have been among the remedies advocated. Since Fehling, in 1887, recommended castration in the treatment of osteomalacia in women, authors have reported as high as 80 per cent. of cures following operation. Sterilization by Roentgen rays has proved beneficial. Results were best in puerperal cases, which often tended to recover spontaneously; nulliparæ were usually not benefited. Metabolic studies do not indicate that a mineral retention is produced after castration, as was supposed. Accordingly, many authors believe that the value of castration and sterilization lies only in the prevention of future pregnancies. Although castration of male cases has been advised in the hope of producing results comparable with those reported in female cases, no report of the operation has been found in the literature.

CONCLUSIONS. Five years after castration the case reported shows no actual improvement in bone structure. A probable remission has occurred, which may have been influenced by the operation. The result of castration in this patient would seem to indicate that osteomalacia is not a disease of the sexual glands.

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AUTOINTOXICATION AND ITS TREATMENT BY (TRANS-) DUODENAL LAVAGE.

BY MAX ERNEST JUTTE, M.D.,
NEW YORK.

AUTOINTOXICATION is a toxic condition of the blood and lymph caused by substances generated through the influences of the vital processes of the organism.